AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

1-23. (Canceled)

24. (Currently Amended) An apparatus to assist a patient's respiration by delivering air to [[this]] the patient through a mask, comprising an air blower wherein [[the]] an impeller is rotated by an electromotor comprising a rotor and a stator, said stator having at least three sectors, the rotation of the rotor being enabled by changes of the polarity of the sectors, each sector's polarity configuration constituting one step of the rotor's rotation, said apparatus further comprising a driving unit controlling changes of the sector's polarity configuration such that the electromotor enables the blower to achieve fast accelerations and decelerations within one patient's breath step, said breath step consisting of one inspiration and one expiration; wherein said driving unit comprises means to sense a back electromotor force generated by the electromotor for changing the sector's polarity configuration when the back electromotor force reaches a zero value.

25. (Currently Amended) The apparatus according to claim 24, wherein said stator has at least three sectors, each of said sectors being connected to one switch connected to a positive plot of [[the]] a power supply and each of said sectors being connected to one switch connected to a negative plot of the power supply, in order that one of the rotor's rotation step is obtained when said driving unit applies tension to the stator by connecting the first sector to said

positive plot, connecting the second sector to the negative plot and setting the third sector not

connected to a power supply plot, thus enabling to measure the back electromotor force of the

motor between the third sector and the negative plot, said driving unit changing the sectors

polarity configuration when the back electromotor force reaches a zero value.

26. (Previously Presented) The apparatus according to claim 25, wherein said tension applied

is a Pulse Width Modulation, the driving unit connecting one of said stator sectors to the

positive plot during a first duration of time and then, during a second period, disconnecting

the same sector from the positive plot and connecting it to the negative plot, so that in case of

deceleration of the motor the generated current is sent to the negative plot, thus providing a

fast deceleration of the impeller.

27. (Previously Presented) The apparatus according to claim 25, wherein said stator is a three

sectors stator and said rotor is a dipole magnet, said stator thus having six sectors polarity

configuration so that the rotor performs one 360 degree rotation in six rotation steps.

28. (Currently Amended) The apparatus according to claim 24, wherein said stator is a

toroidal stator and wherein each of said sectors are coils each connected with ~~only one~~ a

respective wire to each other.

29. (Previously Presented) The apparatus according to claim 24, wherein when the blower is

functioning and no back electromotor force is measured, said driving unit fixes the tension

applied and changes the sectors polarity configuration after a given time, said driving unit

decreasing this given time every step until a back electromotor is detected and then applying

the required tension and changing the sectors polarity configuration according to the back

electromotor value.

30. (Previously Presented) The apparatus according to claim 24, further comprising bearings

and a bearing holder, and wherein said impeller, said rotor and a shaft of said impeller are

fixed together, an inner ring of the bearings being fixed to said shaft and outer rings of said

bearings being held by the bearing holder, which is fixed in the apparatus, and said rotor being

shifted outside the stator, so that the stator also generates on the rotor an axial force oriented

along said shaft, thus generating a preload on the bearings.

31. (Currently Amended) The apparatus according to claim 30, wherein said rotor is shifted

outside of the stator at an equal distance of each of the at least three stator sectors.

32. (Previously Presented) The apparatus according to claim 24, further comprising a power

supply manager adapted to be connected to a positive power supply source, said power supply

manager comprising a current sensor, a comparator, a load resistor and a means to switch on

the load resistor between the positive power supply and a ground when the current measured

by said current sensor is negative, in order to dissipate this current in said load resistor by thermal effect.

33. (Previously Presented) The apparatus according to claim 24, being designed to be connected to a tube having a diameter less than 22 millimeters, a first extremity of the tube being connected to an air outlet of the blower and a second extremity of the tube being connected to a mask in which the patient breaths.

34. (Currently Amended) The apparatus according to claim 24, further comprising: at least one means for detecting the patient's breathing parameters, a pressure control unit to adjust [[the]] a pressure delivered by said blower at the level of said mask, and comprising an estimation module connected to the means for detecting the patient's breathing parameters, in order that the estimation module is able to determine when the patient is inspiring or expiring and in response the pressure to apply to the patient's mask, during inspiration and during expiration.

35. (Previously Presented) The apparatus according to claim 34, wherein said at least one means detects the patient's airflow and sends it to a breath estimator which determines the airflow as a function of time and transmits this function to said estimation module which will thus estimate the pressure to apply to patient's mask according to the airflow function, in

order to decrease the effort of the patient's lung while maintaining, during one breath step, the

average value of the pressure at the mask P_M equal to the pressure of treatment.

36. (Previously Presented) The apparatus according to claim 35, wherein said estimation

module determines the pressure P_M at the mask as a function of time.

37. (Currently Amended) The apparatus according to claim 34, wherein the control unit

comprises a nonvolatile memory in which [[the]] a clinician can enter clinical settings

comprising at least the treatment pressure and optionally the pressure to apply according to the

patient's breathing parameters, said estimation module providing the pressure at the mask

[[PM]] P_M according to these clinical settings and to the patient's breathing parameters.

38. (Currently Amended) The apparatus according to claim 37, wherein the patient can enter

patient settings in said nonvolatile memory, said estimation module providing the pressure at

the mask according to these patient settings and to the patient's breathing parameters within

bounds given by the clinician settings.

39. (Currently Amended) The apparatus according to claim 34, in which the estimation

module is able to determine that an event [[$(E_1, E_2$ or $E_3)$]]occurs in patient's breathing thus

enabling said pressure control unit to provide the blower with the tension to apply to adjust the

pressure at patient's mask.

40. (Previously Presented) The apparatus according to claim 34, wherein said means for detecting the patient's breathing parameters enable the pressure control unit to compute the airflow at patients mask, said estimation module determining that an event (E_1, E_2 or E_3) is occurring with the airflow parameters or shape.

41. (Currently Amended) The apparatus according to claim 34, wherein said estimation module has an inspiration output where said estimation module [[set]] sets the mask pressure [[PM]] (PM) value during inspiration, and wherein said estimation module has an expiration output where said estimation module set the mask pressure [[PM]] (PM) value during expiration, said pressure control unit comprising a switch which is connected alternatively to the inspiration output or expiration output according to the patient's breathing.

42. (Currently Amended) The apparatus according to claim 34, wherein the means for detecting the patient's breathing parameters comprise comprises a pressure sensor for sensing the pressure at [[said]] a first tube extremity and one pressure sensor for sensing the pressure at [[the]] an extremity of the tube connected to the blower outlet, [[said]] an airflow computation module being able to calculate the airflow from these pressures and from [[the]] an tube airflow resistance coefficient [[KT]] (KT).

43. (Currently Amended) The apparatus according to claim 34, wherein the apparatus further comprises a starting means which, when actuated, orders the estimation module to detect a breathing activity, said estimator module sending [[the]] an instruction to stop the blower if no activity is sensed after a given delay.

44. (Currently Amended) The apparatus according to claim 24, wherein a power supply manager comprises a communication module which transmits [[the]] data through the power source wires.

45. (Currently Amended) The apparatus according to claim 44, wherein said communication module comprises:

a Frequency Shift Keying (FSK) modulator which transforms [[the]] binary data sent by [[the]] apparatus sensors or elements in a modulation of [[the]] a frequency of the tension applied on a voltage controlled current source, connected to the external power supply so that the voltage controlled current source transmits the modulation corresponding to the data, and

a FSK demodulator converting the voltage frequency modulation into binary data and transmits it to the elements, so that each sensor or module connected to the power source is able to receive or transmit information.

46. (Previously Presented) The apparatus according to claim 24, further comprising a phonic insulation box wherein the blower is placed, said impeller having a size less than 60 mm and

comprising between 15 and 45 blades, so that the impeller rotates at a speed that generates a sound at a high frequency, enabling said box to insulate the patient from noise.

47. (Previously Presented) The apparatus according to claim 46, wherein said impeller has 27 blades.

48. (Previously Presented) The apparatus according to claim 24, wherein said apparatus is adapted to be used for the treatment of a breathing anomaly.

49. (Previously Presented) The apparatus according to claim 48, wherein said breathing anomaly is selected from the group consisting of snoring, apnea or hypoapnea.

50. (Previously Presented) The apparatus according to claim 28, wherein said stator is obtained by a strip wound cores technique with a high grade thin silicon steel, of about 0.05 mm thickness.